

Northern Species of the Genus *Thorybes* Scudder, (Lepidoptera), and a New Abberation of *Thorybes pylades* (Scudder), from Southern Ontario

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I. PRELIMINARY ACCOUNT

In the northern section of the north-eastern United States or in south-eastern Canada, the capture of a specimen of *Thorybes* which bears a costal fold is nearly always likely to lead to its correct determination as a male of *T. pylades* (Scudder), as distinct from *T. bathyllus* (Smith), the next most likely species, and from *T. confusis* Bell, which is even less likely.

The range of *bathyllus* has been given previously as from Florida and central Texas in the South, to Arizona in the South West; northwards to Sunderland in Franklin Co., Massachusetts, in the East, and to Milwaukee, Waukesha Co., in the Mid-West, having also been reported from Nebraska (Macy & Shepard 1941, Klots 1951). More recently (S. Moore, 1960), it has been reported from no less than fourteen counties in Michigan (including two in the northern and twelve in the southern lower peninsula), to which the specimens collected by the Vogels and illustrated in the present paper add a fifteenth county record with St. Clair Co.

The distribution of *confusis* is generally much more southern, and is known northwards only as far as Missouri, Maryland and the District of Columbia (Macy and Shepard). Dr. Moore reported "specimens from southern Michigan, which from their markings were thought possibly to represent the very similar *T. confusis* Bell, were sent for identification to A. B. Klots, who pronounced them all *bathyllus* on the basis of genitalic examination."

On the 8th June 1968, on a visit to localities in the general vicinity of Pinery Provincial Park in Southern Ontario with Mr. J. L. Rogerson, the writer took a specimen the identity of which was not at once apparent. In general appearance it closely resembled *Thorybes*, and though the wing spots were of medium size, the presence of a costal fold showed firstly that it was a male, secondly that it could not be *bathyllus* (which sometimes has maculation much reduced in size leading to confusion with *pylades*), nor thirdly *confusis* (in which the spots are usually smaller). It was also, however, unlike *pylades* in having a clearly marked postmedian band of hyaline spots extending in a rather Amblyscirtesian pattern into the subapical region of the forewings. This pattern was equally well defined above and below wing.

An unusual case such as this in the genus *Thorbyes* merits that the possible occurrence of unusual circumstances, which might lead to a determination alternative to *pylades*, should at least be borne in mind. Such circumstances are those of accidental importation, which can still happen despite modern transport inspection precautions, storm-conveyed strays and exceptional acts of migration, all of which have been responsible on occasion for individual records of species far out of their normal range.

At least two Hesperiid species foreign to the Nearctic fauna have been

accidentally imported into Southern Ontario in the past, one of these establishing itself securely and expanding its range into several of the northern States. The other was Antillean, and while not a *Thorybes*, the genus *Thorybes* is indeed represented in the American tropics, the climatic regions of which have had a strong influence on the present day character of the Nearctic Lepidopterous fauna. Moreover, of the seven Nearctic *Thorybes* species one other besides *pylades* carries a costal fold, *T. drusius* (Edwards), though all too little is still known of this member of the group. It has been recorded from Texas and Arizona as well as Mexico and in being dark brown with hyaline spot bands, and in its wing shape and general appearance, is like others in its genus. Unfortunately, neither Skinner, nor Lindsey, Bell and Williams had access to this material and were unable to portray the genitalia, but W. J. Holland figured the type male (1931, Plate L, fig. 4), and while no doubt in a long series some variation would be evident, the macular pattern of the specimen figured is not particularly close to the Ontario *Thorbyes* example in question.

II. INVESTIGATION PROCEDURE

Clearly, for the latter, a genitalic dissection was called for and was duly carried out. At the same time, dissections were also made of normally marked ♂ *pylades* and of clearly and normally marked ♂ *bathyllus* individuals, and their permanent preparations, together with the adult specimens from which the dissections were made, are figured in the plate accompanying this paper. In the same plate are also figured normally marked ♀♀ of *pylades* and *bathyllus* for direct comparison purposes. The object of including *bathyllus* in the same series of illustrations is that, despite preclusion of this species from the determination being attempted (due to absence of a costal fold in the male), *bathyllus* and *pylades* females have sometimes been confused, and the Ontario example, which is fortuitously a male, might yet prove to be a variation unconfined to one sex, and simultaneously-presented standards of normality have value in convenience of reference.

Uniformity with the figures of Skinner and Williams was maintained by dissecting free in each case the left harpe and aedeagus and (unlike those authors), mounting them on the same slide as the main genitalic framework, and in the same aspect, after the usual preliminary tissue-softening, dehydration and clearing techniques. Realignment of disturbed aspect was, where necessary, obtained in mounting the prints. Distortion of the preparations was kept to a minimum, but slight rotation of the parts mounted, particularly the aedeagus, due to settlement during the drying process can considerably alter the form apparent as seen in one plane, which should be borne in mind in viewing two dimensional photographs.

Data for all material is given in the Explanation of the Plate. The two *bathyllus* specimens taken in Michigan by the Vogels are, with the associated genitalic preparation, housed in the collections of the Department of Zoology at the University of Western Ontario; the remaining material is in the private collection of the writer, who is also responsible for the photography.

III. RESULTS OF DISSECTION AND EXAMINATION

(i) The serrated distal edges and characteristic clog-like shape of the harpes (fig. 9 in the accompanying plate) confirm the identity of the ♂ *bathyllus* (figs. 6A and 6B) and agree with the figure published as normal for the genitalia of this species by Skinner and Williams, though these authors depicted the aedeagus the other way up from their more usual presentation of this organ. The pair of *bathyllus* selected for illustration herein were chosen for their clarity of markings, but less well marked males may be separated on dissection from *confusis*, which also lacks the costal fold, by the latter's possession of multiple small pointed sclerites within the aedeagus instead of the single "thorn" (as Skinner and Williams term it), in that of ♂ *bathyllus*, as well as by differences in the structural shape of the harpes.

(ii) It does not appear to be generally mentioned in recent texts that in a series of *bathyllus*, it is often possible to separate the sexes by the secondary characteristic of wingshape, and this was found to hold true in the present specimens, in which the difference was rather more evident than in the photographs. It is particularly clear in A. H. Clark's figs. g and h in Pl. 23 of his "Butterflies of Virginia". The tendency in males is for a straighter outer margin and sharper apical angle to the forewing*. The feature may vary individually, but a sharply angled forewing in *bathyllus* is strongly indicative of its being a male specimen.

(iii) The genitalia depicted in fig. 8 confirmed the identity of the normally marked *T. pylades* in figs. 4A and 4B, and agreed with the Skinner and Williams figure for the species.

(iv) The genitalia depicted in fig. 7 of the Ontario *Thorybes* were seen to fall well within the normal variation for such organs of the species *Thorybes pylades* by comparison with the previous dissection referred to, and with the figure of the species given by Skinner and Williams. The harpes are characteristically deep dorso-ventrally in shape, with straighter dorsal edges than in *bathyllus*, and with typically bidentate distal edges. The terminal processes of the uncas are also characteristically straight, and while the aedeagus has rotated slightly since mounting and its proximal region is slightly distorted, resemblance to *pylades* is ample in the original. The specimen illustrated in figures 1 and 2 of the accompanying plate is therefore a hitherto undescribed aberration of *T. pylades*.

IV. DESCRIPTION AND NOMINATION OF ABERRATION

The essential feature of this aberration is the presence of a complete postmedian band of hyaline spots extending from above the tornus to the sub-apical region of the costa, being equally well represented above and below both forewings. In shape, the band is like an unevenly opened out letter "S" on the left upper forewing, with a mirror image on the right. The completion of the band is effected by the addition of two well

*If the principal lines of direction of costae and outer margins in figs. 5B and 6B in the accompanying plate are drawn, produced to intersect, and the angles of intersection compared, the difference will be found greater than 10°, and while any angle made by wing-plane with image-plane during photography can introduce error, the point is here adequately illustrated.

defined, triangular hyaline marks; one in each of interspaces M_1 and M_2 of each forewing.

In descriptive recognition of this completion, the aberration is here-with named: *Thorybes pylades* (Scudder) ab. *integra* (ab. nov.) ♂.

V. TYPE LOCALITY OF ABERRATION

The specimen was taken N.E. of Port Franks in the hinterland of Lake Huron's south-eastern shore. The general area is characterised by the presence of undulating, forested sandy hills which screened both lake and shore from view; the tree coverage, though mixed, being mainly deciduous, and predominantly maple. The forest was periodically interrupted by wide, barren sandy tracks which transversely bridged the hills to the shore. The actual capture was made along a poorly defined trail through moderately open forest where the specimen was the only *Thorybes* seen flying; it was flying low and fast, following the trail approximately when intercepted. Less than a hundred yards away on the steep slope of one of the wide sandy tracks, a number of other *Thorybes* flew from time to time, usually singly and fast, in wide, erratic zig-zag flight from one wall of the forest to the other, occasionally settling briefly on the few bushes present. They were quite probably of the same species, which is no stranger in Southern Ontario, but none were captured. The day was warm and sunny with a hazy blue sky and shade temperature of 90°F.

(By contrast, the New Jersey specimens were easier to capture as they fed at the flowers of a tangled blackberry thicket grown up in a corridor between two sections of forest. It should be added that the locality described as "Morris Plains" in the plate is the mailing address for the area, but also a separate township. The locality is actually in the N.W. sector of Hanover Township, though both are in Morris County.)

VI. A NOTE ON DISTRIBUTION OF MORE NORTHERLY OCCURRING THORYBES

The more southern species *T. confusus* does not yet appear to have been recorded in Canada, and from present records of its distribution, it is the least likely of the three *Pylades* with a northerly range to be encountered even in the southernmost regions.

As far as the writer is at present aware, there are still no records of *T. bathyllus* for Canada either, but unlike *confusus*, its presence in certain likely wooded areas of the western part of extreme Southern Ontario is

EXPLANATION OF PLATE

1. Upperside, and 2, underside, of *Thorybes pylades* (Scudder), ab. *integra* ab. nov. ♂. Pinery Provincial Park, Lambton Co., Ontario. 8 June 1968. D. Lanktree.
- 3A. Underside, and 3B, upperside, of *T. pylades* ♀. Morris Plains, Morris Co., New Jersey, 6 June 1967. D. Lanktree.
- 4A. Underside, and 4B, upperside, of *T. pylades* ♂. Morris Plains, Morris Co., New Jersey. 8 June 1967. D. Lanktree.
- 5A. Underside, and 5B, upperside, of *Thorybes bathyllus* (Smith), ♀. St. Clair Co., Michigan. 8 July 1950. Hal and Ann Vogel (U.W.O. Coll.).
- 6A. Underside, and 6B, upperside, of *T. bathyllus* ♂. St. Clair Co., Michigan. 8 July 1958. H. and A. Vogel, (U.W.O. Coll.).
7. Genitalia of *T. pylades* ab. *integra* ♂ specimen in figs. 1 and 2.
8. Genitalia of *T. pylades* ♂ specimen in figs. 4A and 4B.
9. Genitalia of *T. bathyllus* ♂ specimen in figs. 6A and 6B.



1

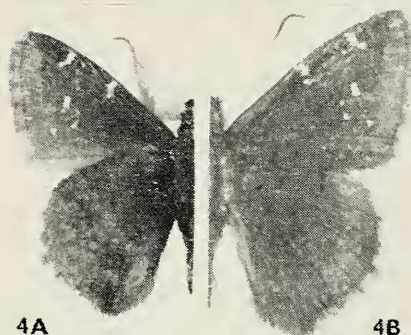


2



3A

3B



4A

4B



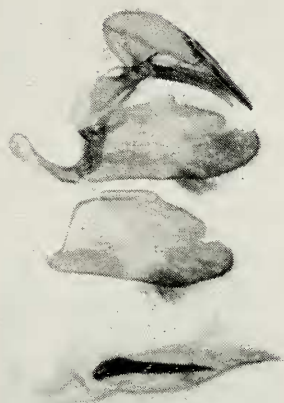
5A

5B



6A

6B



7



8



9

to be both expected and suspected. Recent records show it to be widely distributed in southern Michigan, extending into the central area of the State, and the late Dr. Moore reported it from Wayne Co., which is just across the Detroit River (with its several islands) from Essex Co., Ontario, and the Vogels' records in the present paper are from St. Clair Co., which is across the even narrower St. Clair River from Lambton Co., Ontario. Whether it has been formerly overlooked, or is expanding its range in the area however, is still uncertain.

T. pylades has a much wider and to some extent rather surprising distribution, because its habitat requirements are not fully understood. Thus Lindsey, Bell and Williams report that it occurs throughout the United States and most of Canada, but though it is widespread, it is also very local. Its more usual habitats are the edges of woodland and forest borders with more open land adjacent, where the adult is attracted to feed at certain flowers, and oviposit on the larval food plants which have been described as "clovers and related species". However, there are many such areas from which *pylades* is evidently absent, and just what it does in the Prairie States and Provinces is not at all clear. In its northern range, Dyer recorded Cockle's taking it in the Kootenai District of British Columbia, Brooks gave six localities for it in Manitoba, and Riotte three localities from Northern Ontario, Favourable Lake being the northernmost. In the absence of specially adapted races (for only one race has so far been named), it might be expected that a species with a good northern distribution of localised habitats would be modified in its southern range, and it is unsurprising that some restriction is found in Georgia where, in the discerning judgment of Mr. Lucien Harris Jr., it is "usually to be found in the piedmont and mountain regions from mid-March through August" being "not as common as *bathyllus*". Again, from Macy and Shepard, that "southward, its distribution extends only into the highlands of Mexico as far as Oaxaca". Rather enigmatically however, in Florida, where higher land is limited to the more northern parts of the State, and none is very high, Kimball has reported it from twenty-two localities; six northern, nine north to north-central, and seven south-central to southern including Miami. That the latter records are for spring and fall, and that Kimball suggests the larval food is "probably many Fabaceae", may be important factors in its extreme southern distribution, but in coastal west central Florida at Tampa, it was recorded (by Morgan, 1933, per Kimball), as "fairly common, March-December".

VII. DISCUSSION OF MACULAR-BANDING IN THORYBES

The only other named aberration of *T. pylades* is Skinner's ab. *immaculata* (1911), the type of which was taken in Philadelphia and passed into that city's Academy of Natural Sciences. The situation of having on the one hand *immaculata* with its entirely unspotted forewings, on the other, a newly described aberration with a completed band of spots, and centrally, the norm with a partial band, raises the interesting question as to whether the tendency in present-day populations of *pylades* is in the direction of suppression of former characteristics or of expression of new ones.

The occurrence of pale spots of some form in the same general area as those extra in ab. *integra* is widespread in the *Hesperioidea*, and